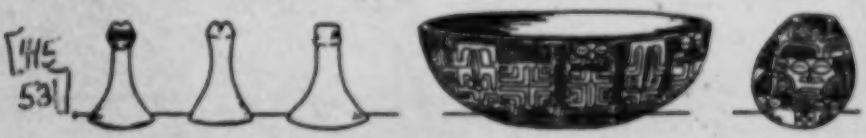
1: Handy E-5 (1920-1921)1923 OX6 Marquesas OX6

to my native informant, of rungs lashed on poles with sennit. On Nuku Hiva I was told that the posts supporting the *fata'a* were carved and also those of the sleeping house in the establishment of a chief who could afford such elaboration, and that the floor was made of small fau logs, a long notched log serving as a ladder. The oven and cooking fire were on the ground underneath the *fata'a*. It was on the *fata'a* that men devoted themselves to their home industries—the crafts of ornament and weapon-making, the shaping of bowls, the making of *popoi* pounders, and to the carving of these.

The Cook House

The cook house *(fa'e tumau)* was a shed on the ground, thatched with coconut leaf mats, open on all sides or closed on two or three sides, with bamboo or fau rods placed sometimes horizontally, sometimes vertically. The oven was a hole in the earth floor. In it lay the small stream boulders



a *b* *c*

Figure 9.—Household utensils: *a*, types of stone *popoi* pounders; *b* and *c*, carved bowls showing typical designs.

that were heated for cooking. Fire was made by friction by the plough method: a short stick of soft wood, usually fau, sharpened at the lower end, was rubbed rapidly in a groove running lengthwise on the surface of a larger piece of soft wood (fau or the dry stem of a coconut cluster preferred), wood dust accumulating gradually in a little pile at the end of the groove away from the operator, until a fine thread of smoke began to rise from this heated pile of dust and then the point of the rubbing stick was thrust quickly into the dust, tinder added, and the glowing bit of dust and tinder were blown into a flame. The burden of making fire every time it was needed was obviated by means of *nanu ahi*, long bundles of coconut sheafs tied with sennit, which when lighted smouldered for a long time. Tongs *(koke mei)* for handling the hot stones in the oven were made of two sticks three or four feet long, preferably of *mi'o* wood. These were held together about a foot from the lower end by means of a loose lashing, which allowed sufficient play for the sticks to be crossed and manipulated as tongs.

1: Handy E-5 (1920-1921)1923 OX6 Marquesas OX6

who made the cord. If it was a plentiful catch, there was general distribution after the makers of the cord had received their share.

Fishing at Pua Ma'u

The following descriptions of fishing at Pua Ma'u, Hiva Oa, were obtained by Linton (20):

The sacred place of the fishermen in Pua Ma'u was named Mahia, and stood on the site of the present leper settlement. It consisted of two or more small houses built on high platforms which are now destroyed. The god of this sacred place was named Ke'eomana, but the sacred place contained no images of any sort. There was in Mata Fenua[1] a human-shaped figure (*tiki*), which was believed to be very ancient, that assisted in the capture of turtles. A pig's head was offered to this after turtles had been caught. None of the informants questioned had heard of fish-shaped images, or of throwing images into the sea and having them return of their own accord, as in the Atu Ona story. Only two men, fisher-*tuhuna*, lived at Mahia constantly. These served the god Ke'eomana and superintended turtle fishing and fishing for feasts. Ordinary fishing was done by all the natives when they wished.

When a chief desired to give a feast, he brought food to the fisher-*tuhuna*, and asked them to go and fish for him. The men of the village would come to the sacred place a short time afterward and say to the *tuhuna*, "Come and go fishing." All would then eat of the food sent by the chief. This food was *tapu* to women. Immediately after pushing off, the canoes would form in line while the leading fisher-*tuhuna* sang three chants with responses, said to be the same three sung on the return. The fishing place was Mata Fenua, and the fishermen went armed in case of attack, the weapons used being reserved for this and *tapu* at other times.

On arrival in Mata Fenua a large oven was dug, and each night the day's catch was cooked in this oven, the fish already cooked being left in it. The party remained in Mata Fenua eight days. On the ninth day the oven was emptied and the fish were packed in the canoes. On the tenth day the party returned.

On arrival at the village all the inhabitants, men, women and children, came down to the shore to welcome them, bringing food which was held up for them to see. Before landing the canoes formed in line, and the leading fisher-*tuhuna* sang three songs[2]. These songs, Matike, the last of the fisher-*tuhuna*, taught to my informant for the price of one pig.

After this ceremony, the canoes went ashore and all the people assisted in dragging them up on the beach and in carrying the fish up to the feast place. The first canoe to land was that containing the singer, who went at once to pay his respects to the chief and was formally thanked by him.

Special Methods of Fishing

Turtle Fishing

In turtle fishing, the proceeding seems to have been much the same, except that the turtles were kept alive and the time of the stay in Mata

[1] The great promontory forming the eastern extremity of Hiva Oa. It was here that Pua Ma'u fishermen went to fish.

[2] The text of these chants will be published in another report. They are responsive chants, founded on mythological references; the most important god addressed is Tanaoa, god of the sea and fishing.

1: Handy E-5 (1920-1921)1923 OX6 Marquesas OX6

staple food. The importance of the breadfruit is indicated by an old custom recorded by Langsdorff (18, p. 135). He says: 241 262

> Every child from the moment of its birth inherits from its parents at least one bread-fruit tree, and this tree is tabooed even to the father and mother. If the parents are so poor that they have not a tree to settle upon the child, one is planted for it immediately: by this means a provision is made for the maintenance of the child, since one or two bread-fruit trees are sufficient to support a man the whole year round.

The natives say that when breadfruit grew in groves, undisturbed by the modern planting of coconuts, and of banana, mango, and other fruit-bearing trees, which seem to have a deteriorating effect upon them, there were more crops each year than at present. (See discussion of breadfruit seasons under Time Reckoning: Ehua and Mataiki.) In the Marquesas each season is divided into *mei nui* (large breadfruit) and *mei momo* (small breadfruit), for there is always on each fruit-bearing stem of these trees one *mei* that matures before the others, the *tou motua* (eldest child). These large *mei*, *mei nui*, are picked first, the rest of the season being given up to picking the small *mei*, *mei momo*, or *hi'ihi*, as fast as they mature.

One can trace native diet through the various seasons from the time of abundance, when all dishes with breadfruit as a foundation appeared, when *ma* (fermented breadfruit paste) was made with an eye to the inter-breadfruit season and to the possible famine time—which apparently came often, for the valleys were over-populated and irregularly watered; and one can follow the gradual change in diet as fresh breadfruit disappeared and *ma* became sourer and needed certain complements to make it palatable, and as, with the increasing scarcity of *ma*, other foundations became necessary; and, finally, one can see the shifts the natives were put to during famine times.

THE MAKING OF MA—STORED BREADFRUIT

Since the main business of harvest time is the making of *ma* (fermented breadfruit) that process should be described first. The horror of famine must have loomed large in the minds of Marquesans, for, in spite of their happy enjoyment of the present without a thought for the future in other respects, they developed in the making of *ma* a very elaborate system of conservation of the breadfruit in silos in the ground. 251 252 [731]

The breadfruit are picked mature, but not ripe, the ripening process being artificial. The stem is knocked off and a small sharpened guava stick (bamboo in Hiva Oa) is struck through at this point, so as to pierce the fruit from end to end. This hastens the ripening, which takes place usually in one day, sometimes in two. When the fruit is sufficiently tender,

1: Handy E-5 (1920-1921)1923 OX6 Marquesas OX6

251 when the fruit is sufficiently tender,
252 [4/13]
the women peel it with the *pu hava*, a shell in which two sharp-edged holes have been filed, and lay it on a bed of fau leaves with a cover of leaves, to ripen further.

The next day, the flesh is so tender that it may be squeezed off the core with the hand. The cores are thrown away, the flesh is put into a temporary, shallow hole, lined with plaited coconut leaves and with banana leaves, or into a *hoa so te ma*, an above-ground basket of plaited coconut leaves attached to a circle of fau pegs driven into the earth (See Pl. v, *A*). Linton describes one of these in detail:

> These containers are made as follows: A number of small saplings are driven into the ground forming a circle four to six feet across. Inside these, mats woven from coconut fronds are placed in pairs so that the walls will be everywhere two or more mats thick. The midribs at the upper edges of the mats are attached to the saplings with strips of *fau* bark. Three tiers of mats are placed one above the other, giving the walls a height of about two feet. The bottom of the container is not covered. Inside these mats, a thick layer of banana leaves is placed vertically, covering the floor and sides. The mat walls are called *paru*, the leaf lining *au meika ameika*.
>
> After the container has been filled with pieces of breadfruit, the ends of the leaves forming the inner lining are bent back so as to cover the top, and are weighted with large stones.

When the *mei* has been drained of some of its water in this temporary hole, and fermentation has started, it is transferred to the permanent silo, or *ma* pit.

For daily use, each family has its own *ma* hole. Pits were dug near the house with iron-wood sticks (*ko fenua*). Mr. Handy has seen one family *ma* pit, which was lined with stones; Krusenstern describes them as being paved with stones (16, p. 161); Dordillon gives the word *pakeko* or *pakeko*, to define a hole lined with masonry, in which to put fermented breadfruit; but the usual container seems to have had only earthen walls. High on the mountains, in ancient times, great tribal *ma* pits were dug for storage against famine. These tribal pits are no longer used, as a rule, though Mr. Handy has seen one at Hapa Toni, Tahu, Ata, containing *ma* a hundred years old, which is occasionally eaten at the present time. (See also 15, p. 47.)

Krusenstern also describes a great *ma* hole on the hillside in Atu Ona valley on the way to Pua Ma'u, which is 15 feet deep on a side, and is at present 25 feet deep. It was formerly 15 feet deeper. The sides are of volcanic clay, with even, ornamental courses made with tools, running around in parallel rows, called *pauao*. The Ati-ku'a had five of these built on hill tops.

Linton says of these tribal pits:

> They are sometimes in or near the feast place, but are more often in the hills where they would be safe in case of attack. Some of them are of great size, the

a [i.e., breadfruit.—Analyst]

1: Handy E-5 (1920-1921)1923 OX6 Marquesas OX6

largest seen being in Taipi, Nuku Hiva, where there is a circular pit fifteen to twenty feet across and at least thirty feet deep. Ordinary household pits average four feet in diameter and three feet in depth and will contain *ma* enough to last the family for a year. 251 252

The *ma* pits are always dug in clay soil [Dordillon (8) gives *tiemo*, to plaster a silo with clay] and are never stone lined, although one or two tiers of stone may be laid around the top to keep earth from falling in. Household pits are round, but some of the large tribal pits are square and the walls of the latter are very smoothly dressed. The walls of one large pit near Po Au, in Atu Ona, Hiva Oa, show regular series of broad, shallow, horizontal grooves, as though an effort had been made at decoration. Natives insist that the watertight clay soil is necessary for the preservation of the *ma* and for this reason the pits sometimes seen in house platforms could not have been used for regular storage.

Linton describes the filling of a *ma* silo as follows:

> The pits are first lined with dry banana leaves (Pl. v, *B*) and then given a second lining of green banana leaves protruding about two feet beyond the hole all around. (Pl. v, *C*). The *ma* is placed in the hole in bulk, being tramped down from time to time [with the bare feet of the men, until it becomes a solid cake]. After the bottom has been filled, a layer of small mats made of two *ti* leaves pinned together [in three places with bits of the midrib of coconut leaves (*honiho*)] is placed around the sides of the hole longitudinally (Pl. v, *D*). These mats are called *papa o ti*, and are made especially for this purpose. [*Ti* leaves do not rot as quickly as others and hence are always chosen.] As the filling of the hole continues, additional tiers of mats are laid, the lower edges of each succeeding layer being tucked under the upper edges of the layer below. The hole is filled heaping full, and the mound is covered with two or three rows of *papa o ti* laid horizontally (Pl. vi, *A*), some short pieces of banana leaf being put on as a cap piece. The ends of the banana leaves lining the hole are then bent back over the mound, and the whole is covered with a litter of dry banana leaves (Pl. vi, *B*). A layer of large stones is laid over the whole, completing the operation.

The *mei* now becomes *ma*, and it may be said to keep almost indefinitely, the natives considering it improved with age. True, the earth mingles with its substance, it becomes darker and sourer, the *ti* leaves and the outer crust of the *ma* rot; but it is kept in what is considered good condition by adding layers of fresh *mei* (*tii moto i te ma*—8) by digging out the center, throwing away the crust, and adding fresh *ti* leaves. *Ma tahito*, which is considered the best, is about ten years old and is dark brown in color. The *ma* on the different islands varies according to the species of breadfruit and the composition of the soil in which the trees are grown. Nuku Hiva *ma* has the reputation of being very dark and very sour, that of Ua Huka, of being white and not sour.

POPOI

Ma is never eaten plain as taken from the hole, but forms the base for *popoi ma* or *popoi mei*. *Popoi mei* is made during the season of abundance, but since the recipe for it includes *popoi ma*, it is better to treat both 252

1: Handy E-5 (1920-1921)1923 OX6 Marquesas OX6

dishes here. The *ma*, almost like clay, is dug out of its hole, carried to the house in a bowl, and placed on the *hoaka* or long, wooden trough to be kneaded. If it is very old and hard, it must be softened with water. Indeed throughout the preparation of *popoi*, water as a lubricant is used so freely as to become an important ingredient. When it is kneaded into a soft dough, it is wrapped in small packages, enveloped in fau leaves and tied with the bark. Today these packages are boiled in water in kerosene cans or large iron pots, but it is the earth oven in which they were originally baked, that we should include in this description.

The average oven is a hole dug in the ground, about two feet deep, three feet wide, and four feet long. In the bottom of it is placed the firewood (*vehie*), and on top of this, stones deeply pitted, which do not burst with heat. Fire was made originally by rubbing a small stick along a groove in a larger stick. (See description under The Dwelling, The Cook House.) In this oven (*umu*) the stones are heated thoroughly, part of them then removed with a *kipo* (which is a kind of long-handled dipper made with a stick passed through a coconut shell), or with the *koke mei* (tongs of two sticks bound together with fau bark which, as its name indicates, is primarily designed to lift roasted *mei* from the fire.) A thin layer of earth is spread over the remaining stones, their heat tested by the bare foot of the cook; the packages of *ma* are put in on a criss-cross of green guava sticks or petioles of fau leaves, to keep them from burning; the remaining stones are heaped about the packages, and the whole is covered with fresh *mi'o* leaves and then overlaid with earth.

Ma is tested like cake, by thrusting a small stick into a package to see if the dough still adheres to the stick. When it does not, the *ma* is cooked. The packages (*koumu*, Hiva Oa, *vahima*, Nuku Hiva—8) are taken out of the oven and unwrapped; the *ma* is placed on the kneading trough and pounded into a smooth paste with the stone *popoi* pounder (*kea tuki popoi*). It is pounded when hot preferably, since fermentation follows quickly when it is pounded cold and the *ma* does not keep so well. After pounding, it is again wrapped in leaf packages and kept until needed. In time it collects maggots and must be washed in salt water before being eaten, but it keep this way for some time.

It is this *popoi ma* which is mixed with the fresh breadfruit to make *popoi mei*. The fresh breadfruit has been ripened with a green guava stick and is now roasted on a wood fire. The blackened and charred skin is peeled off, the core removed, and the flesh mixed with water and pounded on the board until quite soft. Then a hole is scooped in the middle of the white *mei*, the brown *ma* is taken from its package and put into it, the two are kneaded together, with the constant addition of water to make

1: Handy E-5 (1920-1921)1923 OX6 Marquesas OX6

the dough soft, for *popoi* is not made to be chewed but to be swallowed. The proportions of *ma* to fresh breadfruit vary. Some *popoi* is made with two packages of *ma* to one fruit; some, when it is desired very sweet or for children, with one package of *ma* to two fruits. Ordinarily, enough is made at a time to last a week, but for babies it is made fresh daily.

Popoi is always eaten with water and there are various island fashions for doing this. On Ua Pou, for example, each person has a small individual coconut-shell bowl of water, in which to dip his two fingers full of *popoi* scooped from the common bowl, and in which to rinse his fingers. The fashion on Nuku Hiva and Hiva Oa prescribes putting water into the big bowl filled with *popoi* for the whole family, so that one can wrap his two fingers with *poipoi*, moisten it, rinse his fingers and his mouth all at the same time. When the *popoi* is finished, someone drains the bowl of its last drop of water. Melville says *poipoi* was wrapped around the forefinger of the right hand, when eaten (23, p. 77): Du Petit Thouars agrees with what I have been told regarding the use of two fingers (10, p. 362).

As fresh breadfruit becomes scarcer *popoi ma* becomes the staple and they *kahio* the *popoi*—that is, mix it with some other ingredient. Taro (*ta'o*) was baked in its rough coat in former times but at the present time it is boiled, the coat scraped off, and the remainder mixed with the cooked *ma*, the two being pounded together. *Popoi ta'o* dipped in coconut milk is often a substitute in inter-breadfruit seasons for *makiko* or *mei hupaku* for feeding young children. Sometimes ripe bananas are mixed with the raw *ma*, cooked with it in leaf packages, and afterwards pounded to a paste. In recent times raw grated pumpkin, manioc and flour are mixed with the raw *ma* and cooked in the same way. A few breadfruits, called *pateo*, come after the season. These are never wasted.

OTHER BREADFRUIT DISHES

Mei omi.—When the breadfruit season is at its height and dishes other than *popoi* are being made of it, a favorite dish with which to begin the day is *mei omi*. The breadfruit is roasted on an open wood fire, its skin removed, and the hot flesh mashed with cold water into a paste. At the present time, *ti kava*, a very strong tea, is its accompaniment, but salted fish or meat (*inai*) belongs with it. The simplest method of preparing breadfruit is by roasting on a wood fire, as a potato in the skin.

Ka'aku.—The dish called *ko'ehi* in the southern group and *ka'aku* in the northern, is simply made, the roasted breadfruit being taken from the wood fire, peeled, and mixed with coconut milk, pounded till soft, and eaten without further cooking. Garcia says this dish (which he calls *kakou*)

1: Handy E-5 (1920-1921)1923 OX6 Marquesas OX6

252 satisfies hunger for so long a period that it was often eaten on long voyages (14, p. 142).

The preparation of the coconut milk for this and other dishes proceeds as follows: Coconut flesh is grated on a low wooden stool with a long neck on the end of which are iron teeth, but in ancient times a sharp shell was used instead. Moistened in water, the grated flesh is caught up in a *tauaka* and the milk squeezed out. The *tauaka* is an ingenious manufacture, an excelsior-like substance made by flattening the stalks of the reed called *mouku* between two sticks, and then shredding it under water, so as to wash out all the gluey sap. When it is balled up, it becomes a kind of coarse cloth, excellent for straining out the milk from the coconut flesh.

Melville's appreciative description of the whole process (23, p. 132) should be included here:

> There is one form, however, in which the fruit is occasionally served, that renders it a dish fit for a king. As soon as it is taken from the fire the exterior is removed, the core extracted, and the remaining part is placed in a sort of shallow stone mortar, and briskly worked with the pestle of the same substance. While one person is performing this operation, another takes a ripe coconut and breaking it in half, which they also do very cleverly, proceeds to grate the juicy meat into fine particles. This is done by means of a piece of mother-of-pearl shell, lashed firmly to the extreme end of a heavy stick, with its straight side accurately notched like a saw. The stick is sometimes a grotesquely-formed limb of a tree with three or four branches twisting from its body like so many shapeless legs, and sustaining it two or three feet from the ground.
>
> The native, first placing a calabash beneath the nose, as it were, of his curious-looking log-steed, for the purpose of receiving the grated fragments as they fall, mounts astride of it as if it were a hobby-horse, and twirling the inside of one of his hemispheres of coconut around the sharp teeth of the mother-of-pearl shell, the pure white meat falls in snowy showers into the receptacle provided. Having obtained a quantity sufficient for his purpose, he places it in a bag made of the net-like fibrous substance attached to all coconut trees, and compressing it over the breadfruit—which being now sufficiently pounded, is put into a wooden bowl,—extracts a thick, creamy milk. The delicious liquid soon bubbles round the fruit, and leaves it at last just peeping above its surface.
>
> This preparation is called "kokoo," and a most luscious preparation it is. The hobby-horse and the pestle and mortar were in great requisition during the time I remained in the house of Marheyo, and Kory-Kory had frequent occasion to show his skill in their use.

Makiko or *ma pou*.—Another dish that utilizes the fast ripening *mei* is *makiko* (northern name) or *ma pou* (southern name). At present, it is made in the following manner: The breadfruit (*mei*) is picked one day, ripening the next with the aid of a guava stick piercing it; peeled and cored the next day. The ripe flesh is then kneaded in a bowl with coconut milk, until of the consistency of soft dough, when it is wrapped in small packages in fau leaves and tied with a strip of the bark. The packages are baked for an hour in the usual way in the earth oven, when they are

1: Handy E-5 (1920-1921)1923 OX6 Marquesas OX6

removed and eaten immediately. I am told that the truer native process of *makiko* is to ripen the breadfruit by digging a hole about two inches long in the fruit, where the stem has been knocked off, and filling it with the juice and pounded leaves of the *papa vahana* (*Phaseolus amoenus*). The breadfruit (*mei*) is left standing on end, so that the juice runs down the core and ripens the flesh. When it is thoroughly ripe, the skin may be peeled off with the fingers. After kneading the flesh and removing all the lumps, it is mixed with cooked *ma*. The whole is wrapped in *ti* leaves in long bundles and baked in the usual oven. *Makiko* is often fed to new-born children. 252

Feikai mei.—In the old days Marquesans seem not to have been very fond of sweets—nor indeed of any marked seasonings for that matter. The *feikai mei*, however, which they make today and have made for some time, utilizes the honey of bees and seems distinctly to take its place as a dessert, though the natives make a meal of it when they eat it. The milk is squeezed from the grated flesh of about forty coconuts and mixed with sufficient honey to turn the liquid a rich brown. Meanwhile, about thirty breadfruit have been roasted on the wood fire, peeled of their charred skins, and wrapped in fau leaves to keep them hot. Baskets of coconut leaves, about two and a half feet deep by a foot and a half in diameter, are plaited and lined with banana leaves, those of the *meika mao'i* (one of the native bananas) being the best. It should be explained that these leaves are always laid across the hot coals for a short while to scorch and temper them, and after the midribs are shaved thin the leaves are as pliable as rubber. Into these baskets, layer by layer, is laid the flesh of the breadfruit, broken away from the hearts (which are of course thrown away), and gradually the mixture of coconut milk and honey is added until each basket is filled. A few taro, halved or quartered, are placed on top, and the whole is covered with a banana leaf tied tightly around the mouth of the basket. The baskets are placed in the oven and left for about six hours. When removed, the confection is hard, and covered with a coagulated sweet sauce. [263]

Feikai vaihopu.—Slightly different is the making of the *feikai vaihopu*, also a confection of the *mei* picking time—there are local variations of method in Nuku Hiva. After the breadfruit has been picked and left three days, until the skin can be stripped off with the fingers, the flesh is put in *fau* bark (*apoa*) to ripen, the gluey sap of the bark penetrating the flesh and coloring it a beautiful brown. When soft and ripe it is mixed with coconut milk, and put in square-meshed nets made of green fau bark. These are about two feet deep and a foot and half in diameter and are lined with banana leaves. When they are full, they are pulled up at the

1: Handy E-5 (1920-1921)1923 OX6 Marquesas OX6

252 mouth with strips of the fau bark and are hung on green poles across a trench in the ground, three or four feet deep and sometimes long enough to accommodate twenty nets of *feikai*. For many hours large fire-wood has been burning in the trench, and there is now a hot bed of stones in the bottom. These are covered with green sticks, leaves, and a layer of earth. Across the trench are placed the poles with their burden of nets hanging just so as to escape the covered stones. The *feikai vaihopu* is steamed all night under a cover of leaves and earth and bark. When it is taken out, the coconut is all absorbed, except for a coating of sweet, curdled sauce called *kahikahi*. *Feikai* will keep for days in an unopened basket, but must be eaten at once when opened. In Atu Ona, this *feikai* is called *feikai mei pa'a*. Mr. Linton watched the process there and described it as follows (in words and pictures):

Making *feikai* is an elaborate process requiring six days as a minimum. In pre-preparing it, small breadfruit, although apparently not of any special species, are pierced at the stem end with a bamboo, the fragment being broken off in the hole. These pierced breadfruit are then placed in special containers made by removing the bark from a fau log about eight inches in diameter, allowing it to keep its original form. These bark troughs are then lined with fern and the breadfruit laid in them in a single line, (Pl. VI, *C*) the bark being bent back and tied with numerous strings in such a way as to form a closed tube(Pl. VI, *D*). The breadfruits are left in this tube for four days, by the expiration of which time they have become so soft that they are easily peeled and the pulp can be separated from the core with the fingers.

In the meanwhile, several holes about eighteen inches in diameter and a foot deep, have been dug, and these are now lined with a layer of fau leaves. Within the fau leaves, four *ti* (*Cordyline australis*) leaves, tied in pairs by the tip, are laid so that they form a cross, and over these, three or four sections from the center of banana leaves. The banana leaves are wilted before use, to give greater flexibility, and a piece of the midrib about five inches long is left protruding at either end. The successive linings of the hole provide a bucket-like container, and in this is placed the pulp of three or four breadfruit, depending on their size, and about a quart of water. To this is then added sweet juice made by grating and squeezing the kernels of sprouted coconuts and a little coconut meat (Pl. VII, *A*). The ends of the *ti* and banana leaves are then brought up together and tied with a long strip of fau bark, whose ends are twisted together above the hole (Pl. VII, *B*) and attached by means of the rope to a second similar bundle, the pair being hung on a pole supported some distance above the ground (Pl. VII, *C*). Occasionally, a single pair of *ti* leaves is used instead of the four, and there are individual differences in the tying, that enable the owners to identify their bundles in the large oven.

[354] The bundles are cooked in an unusually elaborate earth oven. These ovens are generally used in common by several families, all of whom assist in their construction. The largest seen was over ten feet in diameter and about three feet in depth, and would hold one hundred bundle of *feikai*. The oven is filled with a mixture of large stones and logs, and a fire kept going for twenty-four hours, at the end of which time the boulders are red-hot. The stones and the embers are then raked out, and the oven is lined with an even layer of hot stones, which are covered with a layer of moist earth about three inches thick. A number of peeled *fau* logs six to eight inches in diameter, are then laid across the depression, and the bundles, in pairs, are hung across these so that their weight is partly supported by them (Pl. VII, *D*). Immediately above the logs a single layer of unpeeled fau poles, about an

1: Handy E-5 (1920-1921)1923 OX6 Marquesas OX6

inch in diameter is laid, these poles being as closely spaced as possible (Pl. VIII, *A*). Above these poles are laid three to four layers of coconut palm leaves or coconut leaf mats of the sort ordinarily used in thatching houses (Pl. VIII, *B*). When mats are used, they are always of green fronds. The alternate layers of palm fronds or mats are laid at right angles to each other. Above the palm layer come three to four layers of banana leaves, split banana stems, fau and fern leaves, all intermingled. Above these in turn are laid the bark breadfruit-containers already mentioned, the bark being spread out flat (Pl. VIII, *C*). The whole is then covered with a foot or more of earth and embers (Pl. VIII, *D*). The food is left in the oven for twenty-four hours. 252

The finished *feikai* is yellow-brown in color, the darkness depending on the initial heat of the oven, and is about the consistency of jam.

The preparation of *feikai mei pa'a* that I witnessed in Atu Ona was not on so large or so elaborate a scale as that described by Mr. Linton, but differed in no essential from his account. It may be added that *kiva* or river boulders are always used for this *feikai* on Hiva Oa and are renewed with each oven. Formerly, the confection was made especially for the marriage feasts. (See Festivals.) The scale of the old operation astounds us. Twenty or thirty men worked for five days making the elaborate oven which was perhaps six meters in diameter. For firewood, large branches of *ihi* (*Inocarpus eduli*) of *koku'u* [a hard wood, according to Dordillon (8)], and of *fau* were cut. Banana leaves cut with the bamboo knife were carried in in fagots. Breadfruits were brought sometimes at the rate of eighty to the load of a single man.

Mei hupaku.—During breadfruit season *mei hupaku* is considered an ideal food for new-born children. The breadfruit for this is ripened by piercing it with a guava or bamboo stick and, placed in the oven in its skin, is baked slowly and thoroughly over night. Breadfruit cooked in this way will remain edible for some time. When cold the tender part near the core is scooped out, chewed by the mother, and fed to the young child before it is given breast milk, which is supposed to be poisonous for the first three days after the birth. 853 252

Mei komahi.—*Mei komahi* was formerly fed to babies when they were weaned, this sufficing them for about a year and a half. When the breadfruit had been ripened, it was mixed and kneaded with old dark *ma* (*ma tehito*), and made up into small packages in *ihi* leaves. These were in turn wrapped in fau leaves and cooked in the usual oven, from which they were removed only as needed. It was possible to leave them for two or three months in this cache before they would spoil, though it is doubtful if this was often done, for the custom was to carry *komahi* as presents to others who had young babies. 252 862

1: Handy E-5 (1920-1921)1923 OX6 Marquesas OX6

DISHES ACCOMPANYING BREADFRUIT

252 With the gradual souring of the *ma* through long keeping, the native palate feels the need of accompanying dishes to take the edge off the vinegary preparation. Coconut milk counteracts the acid and is often mixed with the *popoi ma*, sometimes without water, sometimes with. On Hiva Oa, this is called *popoi kao'e* or *ko'ehua* or *nahau;* in Nuku Hiva, *popoi hakauo.*

251 252 The ideal accompaniment of *popoi hakavo* is skate (*fafaua, Raia cephaloptera*) or shark, of which two species are used as food by the natives, *peata* (*Squalus carcharias*) and *mano* (*Squalus maou*). Both of these great fish are treated in the same fashion except that, as the wings of the skate do not spoil, they are hung up to dry without being treated, and are left conveniently hanging for anyone to cut off a piece to chew whenever he wishes. The bodies of the fish, however, are cut into small cubes, salted and wrapped in fau leaves, preferably those in which *ma* has been cooked, as the fish seems to keep better in these cooked leaves though on Hiva Oa it is often wrapped in the clothlike sheath at the base of the coconut leaf stem. These packages of fish—often as many as sixty are made at a time—will keep for months without decomposing, though they emit an odor like ammonia. When a package is opened, the fish is rinsed in sea water and eaten with *popoi hakauo,* its strongly acid, peppery taste harmonizing with the deacidized *popoi.* Skate is sometimes eaten raw with sea [263] water the first day after it is caught, but not later. It should be remarked that in the old days salt for salting the few fish that were so preserved was obtained from sea pools left by the tides and evaporated by the sun. On Nuku Hiva, the natives tell of an old salt mine.

252 According to Jardin, certain lichens and sea weeds are eaten with [222] *popoi: imu nanie, imu veve, imu kanayoi, imu topua* (15, pp. 55-7). *Popoi ma* is also eaten with raw fish, never at present by tearing the fish with the teeth as I have seen it done in the Tuamotu Islands, but by cutting it into cubes and soaking it in sea water. Nowadays, following the Tahitian custom, the natives add the juice of the lime which partly cooks it. According to Melville (23, p. 236), however, the cruder method of eating fish was once in vogue, for he says:

> I grieve to state so distressing a fact, but the inhabitants of Typee were in the habit of devouring fish much in the same way that a civilized being would eat a radish, and without any more previous preparation. They eat it raw; scales, bones, gills, and all the inside. The fish is held by the tail, and the head being introduced into the mouth, the animal disappears with rapidity that would at first nearly lead one to imagine it had been launched bodily down the throat.

1: Handy E-5 (1920-1921)1923 OX6 Marquesas OX6

I have no record, either from personal investigation or from writings of early visitors, that the cooking of fish—either in leaf packages or otherwise—was the custom in the Marquesas. 252

The kind of *inai* (fish or meat) eaten with these various preparations follows largely the different runs of fish. There were certain preferences in the matter of food combinations—such as skate or shark with *popoi ma* and coconut milk, salt fish with *mei omi* and *ka'aku*, but in the main any raw fish dipped in salt water—all kinds seem to have been eaten—is acceptable with any fruit preparation. It is interesting to note the thriftiness that led to the custom of saving to cook over the charcoal all heads and bones of fish, which could not be eaten raw.

Octopus (*feke*) is enjoyed—whenever one is caught. The lower, smaller ends of the arms are eaten raw; but *feke* is preferred dried and salted. The arms are slit open, rubbed well with salt, left over night in a large bowl, washed next day in the river, dried in the sun, and finally hung up in the cook house to be cut up and chewed whenever desired. Formerly on Hiva Oa the octopus was *tapu* to women. [251]

It was sometimes eaten by men after elaborate preparation, resembling that of *feikai mei paa*. The same banana leaf bags were made of two crossed leaves, shaped in a hole in the ground (though the bending *ti* leaves were omitted) and heavily lined with layers of taro leaves (*u*). The octopus was cut up, put inside these bags, and covered with other layers of taro leaves. Coconut milk was then squeezed over the whole, and the banana leaf bag carefully gathered together and tied up with a strip of fau bark. It was not necessary to hang the bags on poles across the small oven in which they were cooked, as the contents were only slightly liquid, but they were set in the oven upon the earth-covered stones and covered in the ordinary fashion. After two hours in the oven, this *fatai u* was removed, cooked to a turn, and both octopus and taro leaves were eaten together. Pig was used in similar fashion with the taro leaves, the coconut milk being omitted, however, as its own grease was sufficient. At present, the natives boil the octopus, as their Tahitian neighbors have taught them, in coconut milk with a bit of *ena* root.

Lobsters (*uka*), crabs (*toetoe; tupa*), and shrimps (*koua*) are dipped in sea water and eaten raw. Shrimps caught in the river with a small net (*to'o*) or with an ingenious slipknot of coconut fiber tied onto the end of a midrib of a coconut leaflet, are chewed to a pulp by the mother, and fed to a new-born baby as a purgative. Raw shrimps and crabs are also eaten by the mother for several weeks after the birth of the child. Today fish is sometimes dried and salted, but it is a recent custom; raw fish is the staple, as has been said. *E ika mito* (evil-smelling fish) is prepared some- [846] [251]

1: Handy E-5 (1920-1921)1923 OX6 Marquesas OX6

252 what as skate, though it can only be kept one day. It is cut into cubes, salted, saturated with lime juice, tied up in fau leaves, and kept until the next day, when it is a gluey mass. This is quite palatable.

Various sea-birds—the *tara*, the *noio*, the *ka*, the *upe* (large wild pigeon), the *keuhe* (snipe)—are braised, being speared on a slender stick, after plucking, and turned as on a spit over charcoals. In modern times chickens (*moa*) are boiled in coconut milk or fried, but it seems doubtful that they were eaten in the old days. On Hiva Oa, the natives say that chickens belonged to the priests, and were never eaten. Langsdorff (18, p. 176) says that poultry were not much in request for food, their plumage only being desired. [237]

Pig (*pua'a, puaka*) is, of course, the staple meat, the principal dish at all feasts and saved for special occasions even in ancient times, as Porter testified (24, p. 113).

> For although the island abounds in hogs, the natives seldom kill them for the use of their families, but keep them for their feasts, and, on such occasions, they will frequently kill five or six hundred at a time. If a relation die, they have a feast on the occasion, and they will save their hogs for years, in order to make their feast abundant, in which consists its chief splendour.

[231] The same writer says that they castrate the boars to improve their size (24, p. 91). Pigs are not stuck, but are hung and strangled so that the blood remains in the animals. A small slit is made in the stomach, just large enough to insert the hand and pull out the bowels, the liver and lights being left in. The bowels are washed, rubbed on stones in the river, turned wrong-side out on a small stick, and cleaned. These are baked separately and eaten with *popoi*. If the pig is sufficiently large a few hot stones are placed in it (on Nuku Hiva though not on Hiva Oa) to aid the cooking, and it is placed on leaves (8) in the oven on its stomach—not on its back as is the Tahitian custom—the hot stones having been covered with *kokuu* leaves, guava sticks, and a layer of earth to keep the animal from burning or baking too hard. Melville (23, p. 187) describes the process as follows: [184]

> Having got thus far in the matter, the body was removed to a little distance; and, being disembowelled, the entrails were laid aside as choice parts, and the whole carcass thoroughly washed with water. An ample thick green cloth, composed of the long thick leaves of a species of palm-tree, ingeniously tacked together with little pins of bamboo, was now spread upon the ground, in which the body being carefully rolled it was borne to an oven previously prepared to receive it. Here it was at once laid upon the heated stones at the bottom, and covered with thick layers of leaves, the whole being quickly hidden from sight by a mound of earth raised over it.

252 621 It is commonly said in Taiohae that the people of Tai-pi living up-valley were not allowed by the hostile lower valley tribe to go down to the

1: Handy E-5 (1920-1921)1923 OX6 Marquesas OX6

sea to fish, and were consequently driven to eating rats. Some say they braised the rats, others say they mashed them in the small round holes to be seen today in the stones of house platforms, and ate them raw with *popoi*. Today meat of various kinds is cut in strips, salted, washed, and dried in the sun; but it is doubtful if it was so conserved in former days.

If there is no *inai* to go with the *popoi*, a ripe banana or a piece of coconut will suffice. Formerly the eggs of the *tara* (small birds which live on the rocks by the sea) were broken into a length of large bamboo, which was sealed with a leaf tied over the open end. When baked, this dish also served as a substitute for meat and fish.

VEGETABLE, FRUIT, AND NUT DISHES

When breadfruit is gone and the sour *ma* is growing scarce, the natives begin to utilize other native products. A variety of dishes are made. Among these are *feikai puauhi* made of raw wild yams peeled and cut up into the coconut-leaf baskets and baked in the oven with coconut milk in the fashion of the *mei feikai; feikai huetu* (a kind of wild banana called *fei* in Tahiti) made of raw, very ripe *huetu* and coconut milk, cooked in the same way; *feikai ta'o* made sometimes with the large *kape ta'o* (*Colocasia esculenta*); *feikai kuma'a* (sweet potato); *feikai hue arahi* (pumpkin); and *feikai meika* (banana). All the fruits must be half-cooked before the *feikai* is made.

Taro forms the basis for a native dish called *poke*. The taro is first peeled and grated (formerly on coral). This is a difficult task, since contact with the raw taro makes the hands itch, so that they must be held now and then over the fire to relieve them, and never, during the process, be put into water. The gratings are wrapped in fau leaves, and baked in the oven. Meanwhile, coconut flesh has been grated, mixed with pounded *ti* leaves to aid in extracting the oil and the whole squeezed from a strainer into a bowl. Hot stones are dropped into the bowl of liquid, which is stirred constantly for about half an hour, until the oil forms and the sauce, which is called *koneko* (8), thickens. When the taro is taken out of the oven, it is pounded with a stone, mixed with the sauce, and eaten hot. *Poke ta'o* can also be made with ripe breadfruit, when such is to be had. The grated taro is kneaded with the flesh of ripened breadfruit on the food board, after which the dough is wrapped in taro leaves, with an outer covering of banana leaves, and left for two days in the ordinary oven. It is eaten with oil of coconut as is the pure *ta'o poke*. Today taro is also baked in its skin in an oven in the same way that sweet potatoes are cooked.

1: Handy E-5 (1920-1921)1923 OX6 Marquesas OX6

252 *Taro leaves.*—Taro leaves (*e u*) are a delicacy, whose virtues Marquesans have always appreciated, though their present methods of preparation —boiling with coconut milk or baking with salt pork—are of Tahitian origin. *Hue taitio* is a genuine native dish, however. A package of young taro leaves is wrapped in many layers of *fau* or breadfruit leaves, which protect it from too intense a heat, and cooked upon charcoals above ground. When the steamed taro leaves are removed, the package is cut into slices, dipped into sea water, and eaten—whence the name, *hue taitio*, which describes the bowl (*hue*), the sea water (*tai*), and the sound made [271] by sucking the delicacy (*tio*). The sea water is of course drunk when the taro leaves have been eaten. Young *ihi* (*Inocorpus eduli*) leaves are prepared in the same fashion. Coconut milk is sometimes used instead of sea water. A further use of taro leaves will be described with the preparation of meat.

Piahi.—In general anything grated and mixed with coconut milk, and baked in a loaf is called a *piahi*. Taro, yams, and manioc are all used to make *piahi*. Probably a *piahi* was made in the old days of wild arrowroot (*pia taki oho au*).

The *ihi* nut (*Inocarpus edulis*), which may be roasted and eaten in the same way as the chestnut of America, is delicious when made into a *piahi*. The nut is cut open with an axe (formerly, the natives say, there grew an *ihi* which could be bitten open or torn apart with the fingers), the kernel is removed and soaked overnight, so that the dark skin can be peeled off. [442] The kernel is then grated (in former times on the tail of a skate) into the coconut milk, the immediate immersion in the liquid preventing it from turning dark and rancid. The milk and gratings are stirred constantly until a thick batter is formed. This is wrapped in banana leaves in long, flat packages, and baked in the oven.

Sometimes, when the new breadfruit season is beginning to show its promise in new young fruits, a green breadfruit is picked to make *ka'aku* but green fruit is not very satisfactory, for the flesh is lumpy and hard to pound. The product is contemptuously called, *ka'aku tu tai peto* (dog's dung, *ka'aku*).

Bananas.—Bananas are eaten raw or are baked in their skins. Some- [251] times they are preserved by drying. Having been first split with the thumb into their three segments and sunned for three or four days, they are wrapped tightly in banana leaves and bark. Prepared in this way they will keep for several months. These uses of bananas, however, are of recent and varied introduction. Porter (24, p. 94) describes the native method of ripening them:

1: Handy E-5 (1920-1921)1923 OX6 Marquesas OX6

The manner of ripening the banana is as convenient and simple as it is expeditious. They dig in the ground a round or square hole, of about three feet in depth, made perfectly level at the bottom, and of the size suited to the quantity of bananas intended to be put into it. They then collect an oily nut, much resembling our common walnut, which is also used by them instead of candles [*ama*]. These are broken, mixed with dirt, and strewed about the bottom of the hole. On this is laid a layer of grass, with which the sides are also carefully lined; after which the bunches of green bananas are packed in, and covered with grass, to prevent the dirt from coming in contact with them. The whole is covered with dirt, and left four days, at the expiration of which time they are taken out perfectly ripe, and of a beautiful yellow colour. 252

Certain other fruits, besides bananas, were eaten raw: a very juicy, sweet apple called *kehia* (*Eugenia jambosa*); a native pineapple (*fa'a noka*); the *katiu*, a kind of melon; the *maii* (*Terminalia* sp.), the *vi* (*Spondias dulcis*), and *Papaya carica*, which is also called *vi* by the natives. The papaya was also cooked. Uncut and unpeeled, it was wrapped in *fau* leaves, and left for two hours in the earth oven, after which it was peeled and mashed in a bowl with coconut milk.

There is no doubt that the constantly feared famine days often came to the Marquesas, when the great *ma* holes on the mountains were opened and their contents partitioned among the families; when *ma* was made of abortive breadfruit, even of their skins and cores which were ordinarily thrown away; when *fau* leaves and the roots of the tree-fern (*tukuu*) were baked in the oven; when wild yams (*puauhi*) were given a quick five-minute roasting in dry leaves on hot coals; when *ti* roots were baked for a long time in an oven with a very hot fire of large wood, then peeled, and chewed for the juice, which is rich and thick like maple syrup; when the kernels in the pandanus made into a paste (15, p. 51) and the small fruits of the fern *pu'u manini* or *moina* were eaten. 252 261

But sooner or later the *tou motua* (eldest breadfruit children)—the first fruits—appeared again; another bread fruit season opened, and the rotation of cookery started again.

ADDITIONAL CULINARY TERMS

Some of the terms relating to food, given by Dordillon (8) may be suggestive: *iaia*, little balls of *ma* not well ground; *kaeo*, to cut breadfruit and extract the heart; *kereuu, popoi* not diluted with water, not ready to eat; *ko*, to knead breadfruit with the hand; *mei kotoa*, breadfruit dried by the sun; *oomu*, cooked many times; *nahi*, small package of leaves; *pope*, package of coarse *ma; pihueu*, to salt meat to preserve it; *pokii*, small package in leaves; *puihi*, dish of native chestnuts; *taahu*, cooked on one side only; *tihuru i tihuu*, to salt meat; *tikohi*, to take out the stones from a hot oven to put in the *ma; tiohu*, wrapped in leaves; *tiumu*, small pack- 252

1: Handy E-5 (1920-1921)1923 OX6 Marquesas OX6

252 age of *ma; tipo*, to put *ma* in packages to cook it; *tohi i te ma*, to get *ma* from the silo, cutting and ladling it with the hands; *toueva*, small package of leaves to cover what is cooked in the earth oven; *tuoo*, to put coconut milk on *popoi*.

KAVA-DRINKING

272 The drinking of *kava* was common in the Marquesas as in other parts of Polynesia. The drink was made from the root of a species of pepper plant (*Piper methysticum*), which was chewed in preparation. It appears that in different parts of the group there was some variation in the practice of chewing the *kava* root to make the drink. Melville (23, p. 194) describes young boys as chewing the root; Porter (24, p. 95) says, "Persons of lower class chewed it"; an old white resident of Taiohae said that young girls always did this there; while on Hiva Oa, my trustworthy informants all agree that *kava*, being *tapu* in ancient times to women and children, was always chewed by men.

On Hiva Oa, the mouthfuls of masticated *kava* root were dropped into a bowl (*kotue*) by the men who were doing the chewing. Water was added, the mass was stirred, and then allowed to stand a short time. The [415] liquid was strained by means of a bundle of crushed reed stems (*mouku*) or a piece of the fibrous sheath that grows at the base of the coconut leaf (*kaka a ehi*), the strainer being dipped in the liquid, passed around, so as to take up the particles of fiber, taken out, and then wrung out by twisting with both hands. Carved coconut-shell drinking cups (*ipu*) were dipped [415] into the bowl and passed around the company.

Melville (23, pp. 194-5) gives the following description of the making of *kava* in Tai-pi:

> Some half-dozen young boys seated themselves in a circle around an empty wooden vessel, each one of them being supplied with a certain quantity of the roots of the "arva," broken into small bits and laid by his side. A cocoa-nut goblet of water was passed around the juvenile company, who, rinsing their mouths with its contents, proceeded to the business before them. This merely consisted in thoroughly masticating the "arva," and throwing it mouthful after mouthful into the receptacle provided. When a sufficient quantity had been thus obtained water was poured upon the mass, and, being stirred about with the forefinger of the right hand, the preparation was soon in readiness for use.

Modern informants say that *kava* was drunk only by old men. Younger men, and particularly warriors, seldom drank it, because it made them weak [266] in the knees. These informants say, however, that *kava* was always drunk as an accompaniment to the eating of human flesh, and on these occasions the warriors always participated. It was usual to take a copious draft of the drink and then quickly to eat a bit of food. The narcotic effect would immediately follow with most men, but some would have to take a number

1: Handy E-5 (1920-1921)1923 OX6 Marquesas OX6

304
532

PLATE IV.—TATOO DESIGNS IN THE MARQUESAS: A LEG DESIGN.

PLATE V.—THE STORAGE OF BREADFRUIT IN SILOS.

251
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A. Basket for draining breadfruit.
B. *Ma* pit lined with banana leaves.
C. *Ma* pit, showing the stored *ma*, and the banana leaves projecting beyond the mouth of the hole.
D. *Ma* pit, showing tiers of *ti* leaves laid horizontally.

251
252

PLATE VI.—THE STORAGE OF BREADFRUIT (*continued*) AND THE PREPARATION OF FEIKAI MEI PA'A.

A. *Ma* pit, showing covering of *ti*-leaf mats.
B. *Ma* pit, showing banana leaf covering.
C. Breadfruit for making *fei kai mei pa'a*, laid in a fern-lined trough of bark.
D. The trough closed like a tube for ripening the fruit.

252

PLATE VII.—THE PREPARATION OF FEIKAI MEI PA'A (*continued*).

A. The ingredients placed in a leaf-lined hole in the ground.
B. The leaves tied to form a bag.
C. The bags containing the ingredients, tied in pairs and hung over a pole.
D. The bag-laden poles placed across the oven.

PLATE VIII.—THE PREPARATION OF FEIKAI MEI PA'A (*continued*).

A. Small fau poles laid across the logs supporting the bags.
B. A layer of coconut palm leaves on the fau poles.
C. A layer of bark covering the coconut leaves.
D. The whole oven covered with earth and embers.

I: Handy E-5 (1920-1921)1923 OX6 Marquesas OX6

251
252

A

B

C

D

THE STORAGE OF BREADFRUIT (*continued*) AND THE PREPARATION OF FEIKEI MĒI PA'A.
Photographs by Ralph Linton

[End Plate 6]

A B C D

THE PREPARATION OF PEIKAI MEI PA'A (*continued*)
Photographs by Ralph Linton

[End Plate 7]

I: Handy E-5 (1920-1921)1923 OX6 Marquesas OX6

252

A

B

C

D

THE PREPARATION OF FEIKĀI MEI PA'A (*continued*)
Photographs by Ralph Linton

[End Plate 8]

1: Handy E-5 (1920-1971)1923 OX6 Marquesas OX6

5: Porter T-5 (1812-1814)1823
OX6 Marquesas OX6

never after heard of. The man died, and the woman was found, and taken back by a canoe, which arrived there in search of feathers. Three or four days after the departure of the canoes, on these voyages of discovery, the priests come lurking to the houses of the inhabitants of the valley, whence they sail, and in a squeaking affected voice, inform them that they have found a land abounding in bread-fruit, hogs, cocoa-nuts, every thing that can be desired, and invite others to follow them, pointing out the direction to sail, in order to fall in with this desirable spot. New canoes are constructed, and new adventurers commit themselves to the ocean, never to return.

Ask them how they obtained their knowledge of those islands, and they tell you from their gods. They name six islands, two have already been mentioned, to wit, Vavao and Ootoopoo. The others are Hitahee, to the south of St. Christiana, which is said to be a small island. Nookuahee and Kappenooa, to leeward of Madison's Island, four days' sail distant; and Pooheka, a fine island, said to lie to the westward of Roberts' Islands, the existence of which is not doubted by them.

Of bananas they count upwards of twenty different kinds, some approaching very near the plantain in their appearance, but it is certain that they have none of the latter on the island. The manner of ripening the banana is as convenient and simple as it is expeditious. They dig in the ground a round or square hole, of about three feet in depth, made perfectly level at the bottom, and of the size suited to the quantity of bananas intended to be put into it. They then collect an oily nut, much resembling our common walnut, which is also used by them instead of candles. These are broken, mixed with dirt, and strewed about the bottom of the hole. On this is laid a layer of grass, with which the sides are also carefully lined; after which the bunches of green bananas are packed in, and covered with grass, to prevent the dirt from coming in contact with them. The whole is covered with dirt, and left four days, at the expiration of which time, they are taken out, perfectly ripe and of a beautiful yellow colour.

The *tarra* is a root much resembling a yam, of a pungent taste, and excellent when boiled or roasted. The natives, by grating it, and mixing it with cocoa-nut oil, make of it a paste which is highly esteemed by them. It grows in a nut soil, and much pains is taken in its cultivation.

The sugar-cane grows to an uncommon size here, it being no unusual thing to see the stalks fourteen feet in length, and ten or twelve inches in circumference. The only use they make of it is to chew and swallow the juice.

The *kava* is a root possessing an intoxicating quality, with

6: Lisianasky T-5 (1803-1806) 1814 OX6 Marquesas OX6

Carpé. This root is about three feet long. The greater part of it grows out of the ground. It takes twelve months to ripen, and is made into puddings, or prepared like yams. 1804. May. 137 [252]

Hoé. A kind of wild potatoe, which has a bitter taste, and affords but little nourishment. It is only used by the islanders in times of famine. [731]

Titou. A root that grows wild in the fields, and resembles our turnip.

Togoogoo. A root of the size of a cocoa-nut without its husk: when boiled, it turns to a sort of pudding. [252]

There is only one species of salad herb on the island, that is calculated for the table. It is called *emahé*, and considerably resembles our field-mustard.

Knowing from experience how necessary the language of a country is to a person who travels in it, especially where no assistance can be obtained, except what some lucky chance may present, as, for instance, our interpreter Roberts; I endeavoured to collect as many words and sentences of the language of this island as possible, which I shall give in the Appendix, in the hope of their being useful to future navigators. 000

During our stay at Tayohaia, I could make no observations on shore: however, having taken a great many lunar distances the day before our arrival at the island of Noocahiva, we were enabled to lay down with great precision the island of Motané. 131

7: Linton E-5 (1920-1921) 1923 OX6 Marquesas OX6

IMPLEMENTS FOR COLLECTING AND PREPARING BREADFRUIT

413 245 Breadfruit is still the Marquesan staple, and utensils for collecting and preparing it form part of the equipment of every family. These utensils may be divided into two classes, those used in collecting and transporting the fruit, and those used in preparing it for food.

NETS AND CARRYING STICKS

245 286 Breadfruit nets are of two sorts, small picking nets and large carrying nets. The picking net consists of shaft and head.

413 [824] The shaft is a long straight pole of some light wood, usually fau. The head consists of a net woven on a forked stick, one foot to 18 inches long. The fork is tied to the shaft and is bent backward so that it stands almost at right angles to the shaft. The wood of a tough vine is usually used for the fork, the angle being given by bending the wood while green and tying the prongs back to the shaft until the wood dries. Within the fork, which is six to eight inches long, a small net is woven having a depth of eight inches to one foot. Commercial string is used for these nets, replacing the sennit of former times. The mesh of the net is large and the knot is like an European square knot. In use, the picker is lifted until the fruit is enclosed in the net; the stem is then caught in the angle of the fork and broken by a slight twist. The fruit are usually picked one at a time and transferred from the picking net to the carrying net, which is hung in the trees near the picker. The average carrying net is about 18 inches in diameter and three feet deep. This net (Pl. LVII, *A*) is also usually made of commercial cord, although sennit is still used. The top of the net is held open by a hoop made from a sapling about three-fourths of an inch in diameter, which has been steamed in an earth oven until it is pliable, bent until the ends overlap, and the juncture covered with many laps of cord. The net is suspended from the carrying stick by three ropes of twisted bark, woven together in the center to form a loop, the ends of ropes being tied to the hoop at equal intervals. The bottom of the net is finished with a ring about two inches in diameter made from two strands of sennit. About this ring the bottom strands of the net are passed in closely spaced double half hitches.

482 Carrying sticks (for transporting the fruit to the house) are simply poles one and a half to two inches in diameter cut from the nearest clump of fau. In ancient times, more carefully made carrying sticks are said to have been used; smoothly finished, and with notches at either end protected by a raised flange. No specimens were seen, and it is probable that even then ordinary carrying sticks were nothing more than saplings.

IMPLEMENTS FOR PREPARING BREADFRUIT

252 413 The implements used in preparing breadfruit vary according to whether the fruit is to be made into *ma* and stored, or is to be eaten at once. In *mā* making large numbers of the fruit are gathered and piled up to ripen. The ripening is hastened by piercing each fruit at the stem end with a pointed stick (Pl. LVII, *D*) or with a piece of crushed bamboo. When the bamboo is used, it is broken off at the surface each time, leaving a fragment of the bamboo in the fruit.

7: Linton E-5 (1920-1921) 1923 OX6 Marquesas OX6

A special tool (Pl. LVII, *C*) made from the shell of a cowrie (*Cypraea mauritiana*) is used for peeling the ripened fruit. 413 252

An oval hole with sharp edges is ground through the rounded end of the shell. At the opposite end the top is broken away, the base of the shell and a strip across the center being left intact. When in use, the shell is held in the hand transversely, with the base against the palm and the sharp edge toward the outer side of the hand. It is moved downward and away from the body. The peelings cut off by the sharp edge pass through the shell and fall out at the rear aperture like the shavings from a plane. These peelers are remarkably rapid and effective, superior to any European tool for peeling breadfruit.

It is interesting that an identical tool is used in Kuschai, in the Carolines, although it is not reported from other parts of Micronesia. It is impossible to outline the Polynesian distribution of this tool. It was used in the Society Islands, but not in Hawaii, and seems to be absent in Tonga. [171]

When properly ripe, the breadfruit are soft enough for the raw pulp to be easily separated from the core with the fingers. Slightly unripe fruits are sometimes cut up for *ma* making. In ancient times this was probably done with a wooden breadfruit splitter. An implement of this sort in the Bishop Museum is eight inches long, with a maximum width of four inches. (See Pl. LVII, *B*.) It has a long oval blade terminating in a broad flat knob. Only the outer end of the blade is sharpened. It is made of some rather hard, light weight wood.

Fresh breadfruit are roasted on an open fire, the proper moment for removing them being determined by the sound they give when tapped with a stick. They are lifted from the fire with two sticks, or, in well equipped households, with tongs. 252 412

These tongs are made from a single straight piece of wood, preferably *mio*, about 2½ inches in diameter and 3 to 4 feet long. The wood is split for the lower two-thirds of its length and the ends spread apart. A few turns of fau bark are usually tied around the upper part of the stick to keep it from splitting in two. Tongs of this sort are also used to arrange the hot stones used in the earth oven, or *umu*. [824]

The charred outer surface of the breadfruit is removed with a knife of wood or bone. Most of the wooden knives appear to have been simple sticks with one end fashioned into a thin blade. Any wood, even that of the fau, might be used. (See Pl. LVII, *E*.) The bone knives are more carefully made (Pl. LVII, *F*.) As all those seen were shaped from the leg bones of cattle it seems doubtful that the type is an ancient one.

The upper end is squared and rubbed smooth, the natural swell of the bone at the joint giving the handle a slightly expanded butt. The blade is formed by grinding away one side of the shaft. The average knife is 9 inches long, with a blade length of 4 inches. The blade is 1½ inches wide at the base, tapering toward a broad rounded point.

After peeling, the breadfruit is dropped into the *popoi* trough, cored, and beaten into a paste with the *popoi* pounder.

7: Linton E-5 (1920-1921) 1923 OX6 Marquesas OX6

415 The *popoi* trough is usually made from breadfruit wood. An average specimen is 5 feet long and 16 inches wide, with square ends, straight sides, and a rounded lower and slightly excavated upper surface. In new specimens the depth of the hollow rarely exceeds 1½ inches but in old specimens it may be as much as 3 inches deep in the center, due to wear. In one very old *popoi* trough, evidently made with stone tools, the interior had been hollowed with fire. The dimensions of individual *popoi* troughs vary considerably, but those used in Nuku Hiva are on the whole shorter and broader than those used in the southern islands.

IMPLEMENTS FOR PREPARING COCONUTS

412 252 Coconuts rank next to breadfruit in the Marquesan dietary, but they seem to have been somewhat less important in pre-European times. They are gathered by hand, without special appliances. The first step in their preparation is to remove the thick husk. This is done by means of a pointed stake, about two inches in diameter, which is fixed rigidly in the ground, point up. To husk the nut it is grasped in both hands, struck sharply upon the point of the stake, and twisted away from it, removing a sliver of the husk, the process being repeated until only the inner shell remains. The process appears easy, but it calls for a considerable skill in manipulation. Nuts are usually husked where gathered, to avoid carrying unnecessary weight.

Nuts other than the thinnest shelled drinking nuts are opened by a few sharp blows of a stone given along the line of greatest diameter, an expert being able to break a nut into two almost equal halves in this way. The water in the cavity of old nuts is thrown away, and the flesh itself, rarely eaten, is grated to extract the milk. Coconut graters vary considerably in the details of form, but are all made upon a single principle.

The graters consist of a stool, or seat of some sort, from one end of which an arm projects more or less horizontally. At the end of the arm the actual scraper is fastened. In ancient times this consisted of a piece of rough coral, or of a strip of shell with the upper edge cut into teeth. Much care is expended upon the seat portion of some of these scrapers, which appears the more remarkable as the furniture of a Marquesan home rarely includes stools or other raised seats. To use the scraper the workman places himself astride the seat, and rubs the nut rapidly over the end of the arm, with a downward and outward motion. A bowl placed below catches the fragments of meat as they fall. When a sufficient quantity of the grated meat has collected, water is added and the whole mixed to a paste.

A strainer is then brought into play to separate the milk from the meat.

This strainer is nothing more than a thick bundle of fiber, about one foot in length and two to three inches in diameter, which is spread out and drawn across the bowl toward the workman, gathering up part of the paste. The ends of the strainer are then twisted in opposite directions, enclosing the paste, and the whole lifted from the bowl and wrung out, the liquid expressed falling back in the bowl. The dry meat remaining in the strainer is thrown away and the process repeated until only a thick creamy white fluid remains in the bowl. Two species of fiber are used for strainers, the commoner is that from the husk of the coconut. The finer strainers are made from the fibers of the stem of a long-leaves plant, which in leaf form and habit of growth resembles large garlic, and from a reference in Jardin (33) is probably *Cyperus macrolema*. No attempt is made to separate the fiber from the substance, the stems are simply split into long strips. (This fiber is also commonly employed for kava strainers, but there is a con-

[824]

7: Linton E-5 (1920-1921) 1923 OX6 Marquesas OX6

ventional difference in the method of straining the two substances, kava being squeezed with one hand only while coconut milk is wrung out with both hands.) [412 252]

Copra, the dried kernel of the coconut, although not a food, plays an important part in Marquesan domestic economy. The old method of copra making was as follows: 412 245

The ripe nuts were husked and broken into two equal halves by the methods just described. These halves were tied together, back to back, by wisps of the husk left attached to them for the purpose. They were then hung up high enough to be out of the reach of pigs and left until the kernel was partly dry and had begun to separate from the shell. The meat was then removed with a special tool made of *toa* wood.

These tools (Pl. LVI, *D*) have a smoothly tapering handle whose outer end is pointed, and a flat or slightly concave blade which curves upward toward its tip. In length they range from 10 to 14 inches and in blade width from 1½ to 2¼ inches. In modern copra making these wooden knives have been largely replaced by tools having an iron blade of somewhat similar form. [177]

Tree cotton appears to have been introduced into the Marquesas in post-European times and the appliance used to separate the fiber of this tree from the seeds is probably an introduction (Pl. LVI, *F*). There is some uncertainty on this point, however, and it seems well to describe the tool as though it were a Marquesan invention. [248] [177]

The instrument consists of a straight piece of fau wood about 20 inches long and ¾ of an inch in diameter whose lower end is split into four equal parts. Two slivers of bamboo, each about four inches long, are placed in the splits at right angles to each other about two inches above the tip of the shaft and lashed with thin string. The tips of the bamboo and of the splints of the shaft are sharply pointed. To use the implement the lower end is placed in a mass of mixed fiber and seeds and the shaft twirled rapidly back and forth between the palms until a mass of fiber has collected around the points. This clear fiber is then removed and the process repeated until only the seeds remain. It should be remarked that the seeds of tree cotton are not covered with lint and separate from the fiber much more readily than the seeds of the commercial cotton.

MISCELLANEOUS DOMESTIC IMPLEMENTS

Digging sticks were employed in agriculture, also in digging earth ovens and *ma* pits. They appear to have been simply poles four to five feet long made of some hard wood, *toa*, *kookuu*, and *piapiau* being the species preferred. The shaft was about three inches in diameter and was sharpened at the lower end into a broad flat edge. In view of the close resemblance between Marquesan stilt steps and the foot rests of Maori digging sticks, it seems rather curious that the Marquesans never hit upon this simple improvement. Digging sticks are no longer used in the group, and no information was obtained as to their exact method of use. 412 [824]

Before the introduction of iron, bamboo knives were used for cutting a variety of soft non-fibrous substances. These knives are now obsolete and no specimens were collected.

11: Cook T-5 (1774)1906
OX6 Marquesas OX6

and answers every purpose modesty requires. The dress of the women is a piece of cloth, wrapped round the loins like a petticoat, which reaches down below the middle of the leg, and a loose mantle over their shoulders.

In the article of eating, these people are by no means so cleanly as the Otaheiteans. They are likewise dirty in their cookery. Captain Cook says he saw them make a batter of fruit and roots, diluted with water, in a vessel that was loaded with dirt, and out of which the hogs had been but that moment eating, without giving it the least washing, or even washing their hands which were equally dirty; and when he expressed dislike, was laughed at.

Hogs are the only quadrupeds they saw; and cocks and hens were the only tame fowls. However, the woods seem to abound with small birds of a very beautiful plumage and fine notes.

With a fine easterly wind they steered till the 17th, when land was seen bearing W. half N., which, upon a nearer approach, they found to be a string of low islets connected together by a reef of coral rocks.

As they steered along the coast, the natives appeared in several places, armed with long spears and clubs, and some were got together on one side of the creek. Two boats well-armed were sent ashore, under the command of Lieutenant Cooper, with a view of having some intercourse with them. They saw them land without the least opposition. Some little time after, however, observing forty or fifty natives, all armed, coming towards the boats, they stood close in shore, in order to be ready to support their people in case of an attack. But nothing of this kind happened; and soon after the boats returned on board, when Mr. Cooper informed the Captain that, on his landing, only a few of the natives met him on the beach, but there were many in the skirts of the woods with spears in their hands. The presents he made them were received with great coolness, which plainly showed they were unwelcome visitors. They brought on board five dogs, which seemed to be in plenty there. They saw no fruit but cocoa-nuts, of which they got by exchanges two dozen.

This island, which is called by the inhabitants Tiookea, was discovered and visited by Commodore Byron. It has something of an oval shape, and is about ten leagues in circuit.

[pp 168 to end, not processed]

/89 cont./

A report of Linton (1938, p. 164) that nursing of children was not practiced by the Marquesans receives no support from the present data, other ethnographic reports or historical sources. Linton claimed that the natives believed that nursing made the child hard to manage and not submissive to its parents; as well as having a deleterious effect on the appearance of the breasts of the mother, which he believed to be of considerable importance to the Marquesan woman: "They believe that prolonged nursing spoiled the breasts and consequently were reluctant to do it (1938, p. 165)."

Breast feeding of infants in the Marquesas is attested by the earliest historical records. Thus Marchand in 1792 stated that one of his staff, Captain Chanal, saw mothers suckling their children. Langsdorf in 1807 observed that children were not weaned until they could "go alone," and many were not weaned until they could speak. Some, however, were occasionally fed with additional semi-solid food, generally popoi (fermented and fresh breadfruit paste, mixed). Although Langsdorf's commander, Krusenstern, claimed that children were not nursed, drawings made by the /90/ expedition artist show infants nursing quite plainly, reinforcing Langsdorf's observations. Radiguet, in 1840, stated that although the child would be accustomed to popoi a little after birth, he would not be weaned until "the last extremity, that is to say, when the milk dries up."

Handy, evidently referring to the informant who was the source of Linton's statement says that the informant must have been speaking of the thin gruel of pounded shrimps and poi used in lieu of mother's milk to purge infants after birth and was certainly not referring to a permanent practice of not nursing infants (Handy 1923, p. 75). Von den Steinen (1928, p. 35) describes stone pounders used to prepare the gruel used as food during the first three days of the child's life, after which nursing was presumably begun as the main source of nourishment.